

THE TUTORIAL GROUP.

HEALING AND TREATMENT OF WOUNDS.

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GENERAL PRINCIPLES OF WOUND TREATMENT.

The importance of preventing sepsis in surgical wounds cannot be exaggerated. It makes the difference between unsuccessful and successful surgery, in many cases between life and death of the patient. To mention that among septic diseases such affections as septicæmia, pyæmia, erysipelas, diffuse cellulitis, malignant pustules, and a host of others, are to be numbered, will indicate the desirability of guarding our patients from the attacks of organisms, or of destroying these should they be present. It is only by attending to the minutest detail of antiseptic treatment of wounds and by giving the most scrupulous attention to apparently trivial details, that we can hope to command success.

Surgical cleanliness means the absence of bacteria from everything that touches or even approaches the wound. This can be obtained only with the greatest care and trouble, but it must be attained. The slightest lapse into carelessness is fraught with danger to the patient, and it is our duty to see that dressings, lotions, instruments, etc., receive this attention.

Wounds accidentally inflicted differ very materially from those made by the surgeon, for in the latter case the skin has been prepared before the operation, and the wounds are usually clean incised wounds. Accidental wounds may be contused and lacerated. The skin, moreover, is never surgically clean. All wounds accidentally inflicted, no matter how trivial they appear, must be thoroughly cleansed if primary union is to be obtained. This is not always an easy matter, as the great bulk of accidents occur to working men in the course of their employment, and the skin is covered with dirt, oil, grease, and other substances containing micro-organisms harmful to wounds.

The chief danger, however, lies in the presence of foreign matter which is invisible, and of which the most dangerous constituents are micro-organisms of a pyogenic nature. The removal of these micro-organisms is of the first importance, and constitutes "Surgical Cleanliness."

A necessary preliminary in the healing of all wounds is the preparation and cleansing of the skin, first the removal of all hairs by shaving the part for a considerable distance round the wound or site of operation, and, as washing the skin with soap and water only removes the superficial dirt, it is therefore necessary to employ other means for the removal of the superficial layers of epidermis, secretions lying in orifices of the sweat glands, and greasy or oily matters not removable by the preliminary soap and water cleansing. Turpentine, absolute alcohol, ether or acetone, may be used for this purpose, and particular attention paid to crevices.

Sometimes alkalis, such as soda and potash, in dilute solution, are used for cleansing purposes, the excess being washed off by sterile water or mild antiseptic solution. These alkalis combine with the fats of the skin to form a kind of soap, which is soluble in water, and so can be readily removed. For cleansing purposes special soaps are prepared with an excess of alkali, *e.g.*, green soap, made with potash and linseed oil, and soft soap. Liquid soaps containing other ingredients, *e.g.*, alkaline spirit soap, which contains four parts of soft soap, two parts (90 per cent.) alcohol. Of the special soaps the most commonly used is perhaps the ethereal soap, which contains alcohol, soft soap and methylated ether, and to this there are sometimes added antiseptic agents, such as iodine of mercury in the proportions of one in 1,000.

The selection of the cleansing agents lies with the surgeon, as also the choice of antiseptics to be used immediately afterwards.

It should be understood that not all cleansing agents and solutions may be applied to the cut surfaces of a wound on account of their harmful influence on the damaged tissues. After shaving, and when the skin and wound have been cleansed, the surgeon proceeds to ligature cut vessels, suture nerves, muscles and tendons, or wire the bone in compound fracture, after which the tourniquet or other means of temporarily arresting hæmorrhage is removed. A few minutes are allowed for the circulation to establish itself, so that any bleeding points which may have escaped the surgeon's notice can be secured, and the wound rendered as dry as possible. Skin sutures are employed to fix the edges of the wound in apposition. The skin around the wound is now freed from blood, and dried prior to the application of the dressings.

The treatment of the accidental wound has been described up to the point of the application of the dressings. Similar procedures applied to the skin, prior to operations, are really elements in the treatment of the wound about to be made by the surgeon, and as such falls to be considered.

The technique of operations, as of wound treatment, has been gradually evolved from the Antiseptic System.

The difference between the old methods and the new methods, the "Antiseptic" and "Aseptic," may be summed up in a sentence: the old method attacked bacteria during the operation and after it, the new exterminates them before it. In both, the underlying principle is the same, namely, the destruction of bacteria, but the practice is different. Why is it better to attack bacteria before the operation than after it? Firstly, the skin of the part is whole then, and it can be treated for the removal of bacteria with greater vigour and thoroughness than a wound. Secondly, the patient's vitality is reduced by the operation, hence, we must aim at making the fight as easy for him as possible in the early post-operative days, and this is best done by excluding bacterial infection. The great principle in present day surgery, then, is the exclusion of bacteria, or, in other words, the prevention of bacterial infection. We recognise that the patient may be infected by his own skin, from the dressings, instruments and ligatures, from the lotions and from the surgeon's and assistant's hands, arms, clothing, and hair. This leads to the preventive measures which are now the preliminary to every operation. It is not the object of this paper to give in detail the sterilisation of dressings, instruments, lotions, etc., but merely the preparation of the skin and the general treatment of wounds.

The patient should be confined to bed for twenty-four hours before operation to accustom him to his surroundings and in order that the general local and pre-operative treatment may be carried out. Gross dirt and grease should be removed by a hot bath and plenty of soap, but the skin of the operation area must receive very careful preparation. After shaving the part, the skin is washed thoroughly, the fat removed, by the use of ether, turpentine, etc. For the rest of the preparation the hands of the person carrying out same must be surgically clean. Continue washing the part with Methylated spirit using sterile gauze swabs, after which the application of chemicals is used. Iodine, Picric acid, Harrington's solution, or other special preparations favoured by the surgeon who is to operate. Iodine, etc., penetrates into the sweat glands and hair follicles, and so reaches bacteria which have escaped the washing. Another advantage is that the yellow staining produced shows the extent of the purified area. A sterile towel may now be applied to the part and bandaged to keep in position.

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